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February 17, 2006

Mr. Jim Tischler
California Regional Water Quality Control Board
North Coast Region
5550 Skyline Boulevard, Suite A
Santa Rosa, CA 95403

RE: **Quarterly Summary Report – Fourth Quarter 2005**
SECOR Project No.: 77CP.60007.03.0249

Dear Mr. Tischler:

On behalf of ConocoPhillips and British Petroleum (BP), SECOR International Incorporated (SECOR) is forwarding the quarterly summary report for the following location:

Service Station

76 Service Station No. 11249

Location

1300 Farmers Lane
Santa Rosa, California

Sincerely,
SECOR International Incorporated

Kristen Flesoras
Associate Scientist

Attachments: SECOR's *Quarterly Summary Report – Fourth Quarter 2005*

cc: Ms. Shelby Lathrop, ConocoPhillips (Electronic Upload into Webextender)
Mr. John Anderson, County of Sonoma, Public Health Division, 3273 Airway
Drive, Suite D, Santa Rosa, CA 95403
Mr. Mark McKormick, Santa Rosa Fire Department, 955 Sonoma Avenue, Santa
Rosa, CA 95404
Mr. Kyle Christie, BP (Electronic Upload into Enfos)

SEE TRC

**QUARTERLY
MONITORING
REPORT:**

**4th Quarter--
2005**

QUARTERLY SUMMARY REPORT Fourth Quarter 2005

76 Service Station No. 11249
1300 Farmers Lane
Santa Rosa, California

City/County ID: Santa Rosa/1TSR053

County: Sonoma

SITE DESCRIPTION

The site is an operating 76-branded gasoline service station located at the northeast corner of the intersection of Farmers Lane and Valley Street in Santa Rosa, California. Site features include a convenience store, two service bays, two dispenser islands, and underground storage tanks (USTs). Properties located in the vicinity of the site consist of residential and commercial developments. Matanzas Creek is located adjacent to the site to the north.

The site was previously occupied by a Mobil Oil (Mobil) service station until 1992, at which time British Petroleum (BP) acquired the property and assumed service station operations and management of ongoing environmental work. Tosco Marketing Company (Tosco, now ConocoPhillips) acquired the property on July 22, 1994. Tosco discontinued the distribution of gasoline fuel products containing methyl tertiary butyl ether (MTBE) at the site on April 18, 1998 (Environmental Resolutions Inc. [ERI], *Soil and Groundwater Investigation Report*, May 25, 2000).

PREVIOUS ASSESSMENT

An unauthorized release report filed by Mobil on September 2, 1987 documented the occurrence of a release of unknown quantity due to the failure of product piping associated with the 10,000-gallon gasoline UST and the 280-gallon waste oil UST (EMCON, *Baseline Assessment*, December 27, 1994).

In August 1988, Kaprelean Engineering, Inc. (KEI) observed the excavation and removal of one steel 280-gallon waste oil UST. One soil sample collected at the base of the UST excavation (10 feet below ground surface [bgs]) contained petroleum hydrocarbons as oil and grease and trichloroethane (KEI, *Soil Sampling Investigation*, August 23, 1988). Stockpiled soil contained 110 parts per million (ppm) total petroleum hydrocarbons as diesel (TPHd) and 3,800 ppm total recoverable petroleum hydrocarbons (TRPH, KEI, *Stockpiled Soil Sampling*, September 8, 1988). The removed waste oil UST was replaced with a new 1,000-gallon double-walled fiberglass waste oil UST installed in 1988 (EMCON, *Baseline Assessment Report*, December 27, 1994).

In October 1991, EMCON supervised the drilling and installation of one groundwater monitoring well (MW-1) in the vicinity of the former waste oil UST. With the exception of detections of specific metals and 1,2-dichloroethane (1,2-DCA) in groundwater, petroleum hydrocarbons were not detected in soil and groundwater (EMCON, November 19, 1991).

During November 1992, Alisto Engineering Group (Alisto) supervised the installation of three groundwater monitoring wells (MW-2 through MW-4) at the site. The boreholes were advanced to approximately 28 feet bgs. Analysis of soil samples indicated the presence of total petroleum hydrocarbons as gasoline (TPHg) at 140 ppm, and ethylbenzene at 0.46 ppm. TPHg and benzene were detected in groundwater up to 89 parts per billion (ppb) and 1.4 ppb, respectively (Alisto, *Preliminary Site Assessment Report*, January 27, 1993).

In January 1999, ERI supervised the removal of one 1,000-gallon used oil UST, which was observed to be intact with no visible holes or cracks. Soil samples collected from beneath the UST contained TPHd, TPHg, and ethylbenzene up to concentrations of 312 ppm, 2.3 ppm, and 0.011 ppm, respectively. This used oil UST was not utilized by Tosco between July 1994, and the time of its removal (ERI, *Environmental Work Associated With Used-Oil Underground Storage Tank Removal*, April 20, 1999). Tosco was subsequently named as a responsible party for the ongoing investigation and mitigation of impacts beneath the site (Regional Water Quality Control Board - North Coast Region [RWQCB-NCR], October 4, 1999).

In November and December 1999, ERI oversaw the removal and replacement of product lines and dispensers, and collected soil samples from the trenches and beneath the dispensers. Soil samples contained up to 605 ppm TPHg, 0.0204 ppm benzene, and 0.477 ppm MtBE.

In March 2000, ERI supervised the drilling of eight soil borings, three of which were converted to monitoring wells (B-4 through B-8, and MW-5 through MW-7). The wells were completed at a depth of 47 feet bgs. Petroleum hydrocarbons and MtBE were detected in soil and groundwater beneath the site (ERI, *Soil and Groundwater Investigation Report*, May 25, 2000).

In June 2001, ERI supervised the installation of two deep zone wells (MW-7D and MW-10), and two dual completion monitoring wells (MW-8S/D and MW-9S/D) completed in the shallow and deep zones. Soil samples were not collected during drilling. Post-development groundwater samples contained up to 130 ppb TPHg and 33 ppb MtBE.

In July 2002, one extraction well (EX-1) and one observation well (OB-1) were installed at the site. Concentrations of TPHg and MtBE were reported in soil samples up to 64 milligrams per kilogram (mg/kg) and 0.96 mg/kg, respectively.

In October 2002, ERI drilled and sampled two direct push soil borings (GP-1 and GP-2) on the west side of Farmers Lane opposite the site. The borings were respectively advanced to 28 and 32 feet bgs. Petroleum hydrocarbons and MtBE were not detected in soil samples. Grab groundwater samples contained up to 620 ppb TPHg and 4,400 ppb MtBE.

In March 2003, ERI submitted an Interim Remedial Action Plan (IRAP), which proposed the installation of a dual-phase extraction (DPE) and ozone sparging (OS) system to control the off-site migration of contaminants beneath the site (ERI, *Interim Remedial Action Plan*, March 18, 2003). The RWQCB-NCR approved the IRAP as stated in correspondence dated August 15, 2003. The RWQCB-NCR also requested further delineation of dissolved MtBE west of the site.

In September 2004, SECOR submitted a proposal to modify the IRAP, and a work plan for the installation of two off-site wells (MW-11 and MW-12) and performance of a DPE test at the site. SECOR recommended DPE feasibility testing to evaluate whether DPE is an effective remedial strategy for the site (SECOR, *Proposal to Modify Remediation Plan and Work Plan for Additional Off-Site Assessment*, September 3, 2004). The modified IRAP and work plan for additional off-site assessment were approved by the RWQCB-NCR in correspondence dated December 20, 2004.

Between March 8 and 10, 2005, SECOR performed DPE feasibility testing utilizing well EX-1 as the pumping well, and wells MW-2, MW-4, MW-7 and OB-1 as observation wells. The calculated TPHg, benzene, and MtBE mass removed during the DPE test were approximately 16.0 pounds, 0.02 pounds, and 0.21 pounds, respectively. Of the calculated mass removed, it was estimated that approximately 0.0039 pounds of TPHg, 0.0000057 pounds of benzene, and 0.0015 pounds of MtBE were removed from the extracted groundwater. Approximately 3,840 gallons of groundwater were extracted during the DPE test. Although DPE appeared to be an effective remedial option based on water level drawdown, high SVE and GWE extraction flow rates, and high soil vapor petroleum hydrocarbon removal rates observed during DPE testing, SECOR did not recommend installing a DPE system due to concentrations of tertiary butyl alcohol (TBA) detected at up to 2,000 micrograms per liter (µg/L) in groundwater.

Based on the results of DPE feasibility testing, and the recommendations included in ERI's March 2003 IRAP, SECOR recommended that a soil vapor extraction (SVE) and OS system be installed at the site (SECOR, *Pilot Dual Phase Extraction Summary Report*, May 18, 2005).

In correspondence dated June 10, 2005, the RWQCB-NCR concurred with SECOR's recommendations for installing a SVE/OS system at the site. The agency requested the submittal of a work plan detailing the SVE/OS system installation by July 25, 2005. SECOR's July 26, 2005 *Work Plan for Soil Vapor Extraction/Ozone Sparge System Installation* was approved by the RWQCB-NCR in correspondence dated August 5, 2005.

The site has been monitored and sampled since the fourth quarter 1992. The highest concentrations of petroleum hydrocarbons, MtBE, and TBA have historically been detected in shallow on-site wells MW-4, MW-6, and MW-7 and shallow off-site well MW-9S, located north-northwest of the site. These wells are situated in the vicinity (MW-4 and MW-7), north (MW-6), and northwest (MW-9S) of the USTs and product dispensers. The direction of groundwater flow beneath the site has historically been toward the north and northwest.

SENSITIVE RECEPTORS

In 2000, ERI conducted an agency and door-to-door groundwater receptor survey. According to files obtained from the California Department of Water Resources (DWR), a total of 22 wells were identified within a one-half mile radius of the site. Twenty were identified as domestic wells, and two were found to be irrigation wells. A quarter-mile radius door-to-door survey performed cross-gradient and downgradient of the site indicated the presence of nine water supply wells, including one municipal water supply well owned and maintained by the City of Santa Rosa. Six of these wells were reported as being abandoned or not used; one well was reported as being used for irrigation purposes; and one well was reported as being used for drinking and irrigation purposes. The closest active water supply well to the site was a private domestic well located approximately 1,000 feet northwest of the site. ERI also performed a utility survey, which indicated the presence of several utilities beneath Vallejo Street and Farmers Lane. Results are further summarized in ERI's *Soil and Groundwater Investigation Report* dated May 25, 2000.

MONITORING AND SAMPLING

Currently, a total of 13 wells are monitored and sampled on a quarterly basis. Ten wells (MW-1 through MW-7, MW-8S, MW-9S, and MW-10) are screened in the shallow water bearing zone, and three wells (MW-7D through MW-9D) are screened in the deeper zone (approximately 60 feet bgs).

During the fourth quarter 2005, water levels were recorded and groundwater samples were collected from the wells. The groundwater samples were submitted to Severn Trent Laboratories (STL) for analysis of gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8015M; benzene, toluene, ethylbenzene, and total xylenes (BTEX) and MtBE by EPA Method 8021B; fuel oxygenates MtBE, tertiary amyl methyl ether (TAME), di-isopropyl ether (DIPE), ethyl tertiary butyl ether (EtBE), TBA, ethanol, 1,2-DCA, and ethylene dibromide (EDB) by EPA Method 8260B.

DISCUSSION

Depths to groundwater in the wells during the fourth quarter 2005 ranged from 11.55 to 14.95 feet bgs, which were within range of historical depths (6.48 feet to 17.46 feet bgs). Groundwater elevations ranged from 185.92 feet to 188.06 feet above mean sea level. Regional groundwater flow within the shallow water-bearing zone during the fourth quarter 2005 was northerly at a hydraulic gradient of 0.015 ft/ft. Since 2001, the historical groundwater flow direction within the shallow zone has predominantly been northerly with occasional fluctuations to the northwest. A regional groundwater elevation contour map was prepared by TRC using the monitoring data collected on November 29, 2005, and is presented in Attachment 1.

During the fourth quarter 2005, relatively low concentrations of GRO and/or one or more BTEX constituents were detected in shallow zone wells MW-1, MW-3, MW-4, MW-6, MW-7, MW-9S and in deep zone wells MW-7D and MW-9D. The highest concentrations of GRO and benzene were detected at 560 µg/L and 48 µg/L, respectively, in well MW-

4. Shallow zone wells MW-2, MW-5, MW-8S, and MW-10, and deep zone well MW-8D did not contain GRO or BTEX constituents at or above laboratory method reporting limits (MRLs).

Relatively low levels of MtBE were also detected in shallow zone wells MW-2, MW-4, through MW-7, MW-8S, MW-9S and MW-10 and in deep zone well MW-7D this quarter. MtBE levels ranged from 0.52 µg/L (MW-5) to 56 µg/L (MW-4). TBA was detected in shallow zone wells MW-4 (580 µg/L), MW-6 (40 µg/L), MW-7 (750 µg/L) and MW-9S (480 µg/L) and in deep zone well MW-7D (17 µg/L). With the exception of the specified TBA concentrations, fuel oxygenates other than MtBE were not detected at or above the laboratory method reporting limits with the exception of 1.3 µg/L of TAME in well MW-4. Dissolved GRO, benzene, MtBE, and TBA isoconcentration contour maps are included in TRC's *Quarterly Monitoring Report, October Through December 2005* (Attachment 1).

Evaluation of historical groundwater analytical data through the fourth quarter 2005 indicates that the highest concentrations of petroleum hydrocarbons and MtBE have been detected in shallow zone wells MW-4 and MW-7, which are located north to northwest of the USTs. Concentrations in these wells have significantly decreased over time. The other site wells, including the deep zone wells, have contained relatively low to non-detectable concentrations of petroleum hydrocarbons and MtBE.

Fuel oxygenates other than MtBE have historically not been detected at or above laboratory MRLs in shallow and deep zone wells, with the exception of TAME and TBA. TAME has historically been detected in shallow zone wells MW-4 and MW-7; however, concentrations in these wells have since declined to low to non-detectable levels. Concentrations of TBA in shallow zone wells MW-4, MW-6, and MW-7 have fluctuated but generally declined over time, while TBA concentrations in the off-site shallow well MW-9S have remained stable and consistent with historical levels.

CHARACTERIZATION STATUS

Contamination in soil is adequately delineated. The majority of soil impact is limited to the capillary fringe in the area of the product dispensers.

The extent of dissolved impacts has been defined in the shallow zone by generally non-detectable concentrations of petroleum hydrocarbons and fuel oxygenates other than MtBE, and low to non-detectable concentrations of MtBE upgradient of the USTs and product dispensers (MW-3 and MW-10), and cross-gradient to downgradient to the northeast (MW-1 and MW-5). Although the downgradient extent of impacts have been defined by non-detectable concentrations of petroleum hydrocarbons and relatively low levels of MtBE in downgradient wells MW-8S and MW-9S north to northwest of the site, the extent of dissolved TBA has not been defined in the vicinity of wells MW-7 and MW-9S. Additional wells (MW-11 and MW-12) were installed the week of January 9, 2006 to further delineate the lateral extent of the dissolved TBA plume cross-gradient of the site to the northeast.

The vertical extent of dissolved petroleum hydrocarbons and fuel oxygenates other than MtBE have generally been defined by non-detectable concentrations in deep zone wells

MW-7D through MW-9D. The lateral extent of dissolved MtBE has been delineated to low levels in MW-7D, and non-detectable concentrations in wells MW-8D and MW-9D.

WASTE DISPOSAL

The volume of purged groundwater generated during the fourth quarter 2005, and the method of disposal is included in TRC's *Quarterly Monitoring Report, October Through December 2005* (Attachment 1).

REMEDIAL STATUS

Approximately 65 tons of contaminated soil were removed from the site during product line removal and replacement activities in 2000. Currently, active remediation is not being performed at the site. However, SECOR is currently proceeding with plans to install a SVE/OS system on-site.

RECENT SUBMITTALS / CORRESPONDENCE

None.

THIS QUARTER ACTIVITIES (Fourth Quarter 2005)

1. SECOR submitted the *Quarterly Summary Report – Third Quarter 2005* on December 15, 2005.
2. Groundwater monitoring and sampling activities were performed by TRC on November 29, 2005.
3. In accordance with SECOR's July 26, 2005 *Work Plan for Soil Vapor Extraction/Ozone Sparge System Installation* and SECOR's September 3, 2004 *Proposal to Modify Remediation Plan and Work Plan for Additional Off-Site Assessment*, SECOR obtained permits for the installation of on-site remediation wells, and the installation of two off-site groundwater monitoring wells (MW-11 and MW-12). SECOR scheduled the work to commence during the week of January 9, 2006.
4. SECOR submitted remediation system design plans and began the process of obtaining a building permit through the City of Santa Rosa Department of Community Development. SECOR also submitted an application package to the City of Santa Rosa Fire Department for a permit to operate the remediation system.

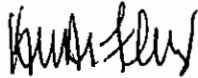
NEXT QUARTER ACTIVITIES (First Quarter 2006)

1. TRC will perform groundwater monitoring and sampling.
2. SECOR will submit the *Quarterly Summary Report – Fourth Quarter 2005*.
3. SECOR will submit a report documenting the installation of remediation and groundwater monitoring wells, which took place during the week of January 9, 2006.
4. Upon receipt of necessary permits, SECOR will begin construction of the SVE/OS system. It is anticipated that the SVE/OS system will be brought on-line during the second quarter 2006.

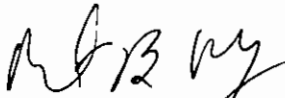
LIMITATIONS

This report presents our understanding of existing conditions at the subject site. The conclusions contained herein are based on the analytical results, and professional judgment in accordance with current standards of professional practice; no other warranty is expressed or implied. SECOR assumes no responsibility for exploratory borings or data reported by other consultants or contractors.

Sincerely,
SECOR International Incorporated



Kristen Flesoras
Associate Scientist



Rusty E. Benkosky, P.E.
Principal Engineer



Attachments: Attachment 1 – TRC's *Quarterly Monitoring Report, October Through December 2005* Dated January 11, 2006

ATTACHMENT 1
TRC'S QUARTERLY MONITORING REPORT,
OCTOBER THROUGH DECEMBER 2005
DATED JANUARY 11, 2006

Quarterly Summary Report – Fourth Quarter 2005
76 Service Station No. 11249
1300 Farmers Lane
Santa Rosa, California
SECOR Project No.: 77CP.60007.03.0249